

FUEL VOLATILITY AS AN ADJUNCT TO AUTO EMISSION CONTROL. R. W. Hurn, Dennis B. Eccleston, and Barton H. Eccleston, U.S. Department of Interior, Bureau of Mines, P.O. Box 1398, Bartlesville, Okla. 74003

Late-model vehicles were used in an experimental study of the interaction of fuel volatility with emissions and associated fuel economy. Volatility characteristics of the test fuels ranged between 7 and 14 pounds Reid vapor pressure; between 130° and 240° F 50% point; and between 190° and 370° F 90% point. Choke settings of each vehicle were adjusted as needed for choke action appropriate to each fuel's volatility.

Midrange and back-end volatility were found to influence emissions significantly. The principal influence is upon emissions during cold start and warmup. Results show that, in general, hydrocarbon and carbon monoxide emissions are reduced by increasing either, or both, midrange and back-end volatility. Fuel economy during starting and warmup also was improved by increasing volatility in the midrange and back-end portion of the boiling curve. Within the vapor pressure limits traditional of U.S. fuels, vapor pressure and fuel front-end volatility were found to have only slight effect upon either emissions or fuel economy.